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Donald K. Harper JR.

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EXAMINER

GUSHI, ROSS N

ART UNIT

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2833

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Please find below and/or attached an Office communication concerning this application or proceeding.



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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/619,647
Filing Date: July 14, 2003
Appellant(s): HARPER, DONALD K.

MAILED
DEC 06 2004
GROUP 2800

Mark Harrington
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 9/20/04.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) *Related Appeals and Interferences*

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) *Status of Claims*

The statement of the status of the claims contained in the brief is correct.

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) *Summary of Invention*

The summary of invention contained in the brief is correct.

(6) *Issues*

The appellant's statement of the issues in the brief is correct.

(7) *Grouping of Claims*

(8) *Claims Appealed*

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) *Prior Art of Record*

6375474	Harper, Jr. et al.	4-2002
6217348	Lin et al.	4-2001
5860831	Roder et al.	1-1999
5228861	Grabbe	7-1993

(10) *Grounds of Rejection*

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The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harper, Jr. et al. ("Harper") in view of Lin et al. ("Lin").

Regarding claims 1, Harper discloses an electrical contact assembly comprising a contact terminal comprising a base 25 and cantilevered deflectable contact arms (15, 17) extending from least one lateral side the base, a first contact arms extending a downward direction and second one contact arms extending in an upward direction, wherein the contact arm comprises surface contact area for contacting a second pad on second electronic component, and wherein first and second contact arms are adapted to deflect when the contact area of the second contact arm is contacted by the second pad of the second electronic. Harper does not discuss a fusible element. Lin discloses a fusible element 2 attached to terminal tail 52. At the time of the invention, it would have been obvious to attach a solder ball to the Harper arm as taught in Lin. The suggestion or motivation for doing so would have been to create a permanent and reliable electrical connection between the terminal and the board, as taught in Lin and as is well known in the art.

Per claim 2, the contact terminal comprises stamped sheet metal.

Per claim 3, the contact are is curved.

Per claim 4, the first and second contact arms extend from same lateral side the base.

Per claim 5, the first and second contact arms extend opposite directions generally parallel each other.

Regarding claims 6, 7, Harper does not disclose a concave bottom surface. Lin discloses a concave bottom surface 42, wherein a top surface the fusible element is attached to an end of the contact against the bottom concave surface. At the time of the invention, it would have been obvious to construct the Harper arm with a concave surface for mounting a solder ball as taught in Lin. The suggestion or motivation for doing so would have been to facilitate attachment of a solder ball as taught in Lin.

Regarding claim 8, Lin notes that it is known in the art to attach a solder ball by extending an a contact arm into the ball (see Lin figure 1). At the time of the invention, it would have been obvious to attach a Solder ball to the Harper arm using well known methods, such as by having the arm extend into the ball as noted in Lin. The suggestion or motivation for doing so would have been to attach a solder ball to a terminal, such motivation being well known in the art.

Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grabbe in view of Lin et al. ("Lin").

Regarding claims 1, Grabbe discloses an electrical contact assembly comprising a contact terminal comprising a base (see figure 12) and cantilevered deflectable contact arms extending from least one lateral side the base, a first contact arms

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extending a downward direction and second one contact arms extending in an upward direction, wherein the contact arm comprises surface contact area for contacting a second pad on second electronic component, and wherein first and second contact arms are adapted to deflect when the contact area of the second contact arm is contacted by the second pad of the second electronic. Grabbe does not discuss a fusible element. Lin discloses a fusible element 2 attached to terminal tail 52. At the time of the invention, it would have been obvious to attach a solder ball to the Grabbe arm as taught in Lin. The suggestion or motivation for doing so would have been to create a permanent and reliable electrical connection between the terminal and the board, as taught in Lin and as is well known

Claims 9-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grabbe in view of Lin as in claim 1 in view of Roder et al. ("Roder").

Per claim 9, Grabbe discloses a carrier 12" with apertures and tabs 22' to form a stapled connection between terminals 20" and carrier 12". Regarding whether the tabs extend back toward the body, to the extent that it is arguably ambiguous whether the Grabbe tabs extend back toward the main body, Roder discloses tabs 30, 32, which extend back towards the body. At the time of the invention, it would have been obvious that the crimping of the Grabbe tabs 22' could naturally result in the tabs extending back toward the body, as shown in Roder. Such a structure would have been an obvious if not natural consequence of the crimping die and would have been desirable to best secure the contact to the substrate, such motivation being well known in the art.

Per claims 10, 11, 12, the Grabbe carrier comprises a flexible dielectric film sheet of insulative material and a plurality of apertures.

Claims 13, are rejected for the reasons pertaining to claims 1 and 9-12.

Per claim 14, the Grabbe terminal is made from sheet metal.

Per claim 15, the Grabbe arms extend up and down and the contact areas are curved.

Claims 9, 10, 13-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harper and Lin as in claims 1-8 in view of Grabbe and Roder as discussed regarding claim 9. Per claims 9, 13, Harper discloses a carrier 11 with apertures 19. Harper does not use tabs to form a stapled connection. Grabbe discloses using tabs 22' to form a stapled connection between terminals 20'' and carrier 12''. At the time of the invention, it would have been obvious to attach the Harper/Lin contact assembly to a carrier such as by using tabs in the terminal base to form a stapled connection as taught in Grabbe and Roder as discussed regarding claim 9. The method of attachment of the terminal to the carrier, whether by using apertures and posts as in Harper or by using tabs inserted into slots and subsequently bent as taught in Grabbe would have been a matter of engineering design choice motivated by known factors such as ease of assembly, cost, etc.

Per claim 10, the Harper carrier comprises a sheet 31 of insulative material and a plurality of apertures.

Claims 14-22 are rejected for the reasons pertaining to claims 1--9.

(11) Response to Argument

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A. Regarding the 35 USC 112, second paragraph, argument, the examiner has considered applicant's argument and has withdrawn the rejection to simplify the appeal. The examiner points out that applicant's explanation of the use of the term "compound curvature" is inconsistent with what is claimed and what is in the specification. Applicant claims that the surface contact area (58) comprises a compound curvature (see claim 3) and now applicant argues that one curve is at reference number 18 and the other is at 48, both of which are away from and separate from the surface contact area 58. Nevertheless, in order simplify the appeal, the examiner has withdrawn the rejection.

B. Regarding claim 1, applicant argues (brief pages 5-6) that the proposed modification would not have been obvious because of the obvious risk that the solder connection could be damaged (page 6, second par) when the contact arms deflect. Applicant argues then that applicant has discovered however that this risk is actually minimal (page 6, second par). The examiner maintains that the modification would have been obvious and that the suggestion or motivation for doing so would have been to create a permanent and reliable electrical connection between the terminal and the board, as taught in Lin and as is well known in the art.

Applicant argues that the examiner is using improper hindsight (page 7, second par). In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was

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within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Regarding claim 3 (Brief page 8), clearly Harper has the same structure as applicant's invention.

Regarding claim 6, (Brief page 8), the examiner maintains that there is no suggestion for the proposed modification. The examiner maintains that the suggestion or motivation for the modification would have been to facilitate attachment of a solder ball as taught in Lin.

Regarding claim 7, the examiner's response is the same as noted with respect to claim 1.

C. Regarding claim 1 with respect to Grabb and Lin, the examiner's response is the same as set out above with respect to Harper and Lin.

Regarding claims 9-15, the examiner has withdrawn the rejection under Grabbe and Lin in favor of the rejection under Grabbe and Lin in view of Roder.

D. Regarding claims 9 and 13, applicant argues that the examiner is using improper hindsight (brief pages 14-17). In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed

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invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). The examiner maintains that the tabs bending back toward the base would have been an obvious if not natural consequence of the crimping die and would have been desirable to best secure the contact to the substrate, such motivation being well known in the art.

Regarding claim 15 (Brief page 17), clearly Grabbe has curves along the length of the arm as does applicant's invention. Applicant claims compound curvature in the surface contact area and the examiner maintains that the surface contact area of the Grabbe contact shows the structure of applicant's surface contact area.

E. Applicant's arguments here are the same as the arguments presented in sections A-D and the examiner's responses are the same as presented in sections A-D above.

For the above reasons, it is believed that the rejections should be sustained.

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Respectfully submitted,

November 16, 2004

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